

The Rational Formula

$$Q_p = CiA/0.36$$

Q_p	28.7l/s	Peak discharge from catchment
A	0.14ha	Catchment area
i	56.7mm/hr	Average rainfall intensity
C	1.3mm/hr	Dimensionless coefficient

Determination of C

Value of C_v		
C_v	1	Volumetric runoff coefficient
Value of C_R		
C_R	1.3	Routing coefficient

Determination of i

Determination of M5-60 min and r

M5-60min	19mm	5 year - 60 minute rainfall depth
r	0.35	Ratio of the 5 year - 60 minute rainfall depth to the 5 year - 2 day rainfall depth
D	30min	Rainfall duration
T	100year	Return period

Determination of M5-D

Z_1	0.79	
M5-D	15.0mm	rainfall depth of 5 year return period for required duration

Determination of MT-D

Z_2	1.99	
MT-D	29.85mm	rainfall depth of the required return period

Determination of point rainfall intensities

i	59.7mm/hr
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Application of areal reduction factor

A	0.0014km ²
ARF	0.95
i	56.7mm/hr